

## What is Musical Prosody?

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## Introduction

- Music performance is everywhere
- Variation is added to music
  - Pitch, time, amplitude, timbre
- Lots of studies have been done on “musical expression”
  - On what and why
  - But need to understand how?

## Introduction

- Manipulation of Acoustic Signals analogous to the way talkers manipulate speech.
- Both can be manipulated to a certain extent without changing the categorical information
- Paper will focus on the forms and function of musical prosody

## Musical Prosody

- Is obligatory (much like speech).
- Every musical performance represents some choice of physical variables
  - Gives rise to stress, accent, rhythm, intensity
- Musicians tend to reproduce performances with same music with the same prosodic choices.
- Tends to change systematically with musical context in which tones appear

## Musical Prosody alters with intent: Interpretations

- Interpretation must be involved.
- Yes, degree of from in expression
- But theorists believe some are preferred over others
- Leads to question of individual interpretations versus general principles across all performers and listeners.

## Defining Prosody

- In grammar: “study of accent, or phonetic properties of syllables and words relevant to the measure of rhythm and meter.”
- Concerned with rhythm, grouping, and prominence
- Temporal aspects of music and speech has very important similarities

## Defining Prosody

- Major difference: degree of isochrony
  - Temporal regularity shown by Drake (2000)
  - Languages do not show the same regularity
- To sum up:
  - Music may be more constrained in pitch and duration categories, but there is still a degree of flexibility
  - Linguistic stress and musical accents are much more similar for prosodic purposes

## Functions of Musical Prosody

- Linguistic Prosody has several functions that may not relate to music
- But there are other functions that relate better to music
  - Segmentation
  - Prominence
  - Coordination
  - Emotional response

## Prosody Functions: Segmentation

- Segmenting continuous signals into events, sources, and relations is a major part of auditory communication
- Popular musical unit is the phrase.
- Supported in studies by Palmer & Juszyk
- Separating musical voices and melodies
- Prosodic cues important for segmentation and phase structure

## Prosody Functions: Prominence

- Using stress, accent, etc., to highlight and focus elements of a sentence
- Especially important for ambiguous forms of music with meter, phrasing, or melodies that are not clear
- Like in speech, prominence can be used to exaggerate aspects of structure

## Prosody Functions: Coordination

- Important prosody in speech is regulation of inter-speaker coordination
- Most music is collaborative and requires coordination also
  - Sometimes done externally through conductor
  - In small ensembles, coordination is within
    - Possibly through a designated leader
    - Possibly through turn-taking also
    - Possibly through previously heard musical pieces

## Prosody Functions: Emotional Response

- Music → language of emotions
  - Studies focused on emotions that can be conveyed through music
  - Little research on music's emotional content
- Emotional prosody used to gain insight into speaker's emotive disposition
- Typical means include tempo, sound level, timing, articulation, vibrato, tone attacks & decays, and pauses.

## Prosody Functions: Emotional Response

- Music's emotional connotation are dependent on many factors
- Not all emotional content is conveyed through musical prosody as experimented by Peretz (1998)
- But it does play an important role in expressing emotional content (Dogil 2003)

## Prosody Functions: Summary

- Musical Prosody can serve various functions:
  - Segmenting a continuous stream into component units
  - Highlighting items of relative importance
  - Coordination among producers
  - Attributing emotional states to producers

## Rule-based Models of Musical Prosody

- Rule-governed relationship?
- Sundberg 'analysis-by-synthesis' rule-based model
  - Enhance segmentation by articulating group boundaries
  - Enhance prominence of tones by exaggerating pitch or duration differences
- Todd models musical timing to kinematic laws

## Acquisition of Musical Prosody

- What role does prosody play in learning?
- Aid in understanding of higher-order relationship
- Especially important in music
  - Resolve structural and emotional ambiguity
  - Help grasp emotional content of music
- Infant responses to speech and music explains why prosody is important

## Musical & Linguistic Prosody Relation

- Differences in durational variation between French and English speaking composers
- Direct connection seen through some neurological evidence
- Musical Training heightens ability to detect emotional connotations in speech
- Will likely see more studies yielding same results

## Conclusions

- A complex, rule-governed form of auditory simulation
- Moves listeners emotionally in systematic ways
- Reflects constraints based on shared cognitive principles
- Partially influenced by structural ambiguity of music

## Conclusions

- Important to note that not all variability is intentional
  - Sometimes durations are modeled after motor response delays
- Significant research done in most of the prosodic function
  - Minus coordination

## Future Research & Questions

- Two lines of research developing
  - From experiments that manipulate acoustic parameters of musical prosody
  - From neurological studies that study the mapping of these functions
- Allow us to address some interesting questions